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see Page 6



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RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/780,438C

DATE: 05/08/2003

TIME: 14:42:57

Input Set : A:\EP.txt

Output Set: N:\CRF4\05082003\I780438C.raw

3 <110> APPLICANT: Qi, Xiaoyang
 5 <120> TITLE OF INVENTION: Fusogenic Properties of Saposin C and Related Proteins and Polypeptides
 6 for Application to Transmembrane Drug Delivery Systems
 8 <130> FILE REFERENCE: 10872/0474352
 10 <140> CURRENT APPLICATION NUMBER: US 09/780,438C
 11 <141> CURRENT FILING DATE: 2000-02-11
 13 <150> PRIOR APPLICATION NUMBER: US 60/181,754
 14 <151> PRIOR FILING DATE: 2000-02-11
 16 <160> NUMBER OF SEQ ID NOS: 6
 18 <170> SOFTWARE: PatentIn version 3.1
 20 <210> SEQ ID NO: 1
 21 <211> LENGTH: 40
 22 <212> TYPE: PRT
 23 <213> ORGANISM: Homo sapiens
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 31 Lys Leu Ile Asp Asn Asn Lys Thr Glu Lys Glu Ile Leu Asp Ala Phe
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 35 Asp Lys Met Cys Ser Lys Leu Pro
 36 35 40
 39 <210> SEQ ID NO: 2
 40 <211> LENGTH: 38
 41 <212> TYPE: PRT
 42 <213> ORGANISM: Homo sapiens
 44 <400> SEQUENCE: 2
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 50 Ile Asp Asn Asn Lys Thr Glu Lys Glu Ile Leu Asp Ala Phe Asp Lys
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 54 Met Cys Ser Lys Leu Pro
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 58 <210> SEQ ID NO: 3
 59 <211> LENGTH: 38
 60 <212> TYPE: PRT
 61 <213> ORGANISM: Homo sapiens
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 64 <221> NAME/KEY: MISC_FEATURE
 65 <222> LOCATION: (1)..(1)
 66 <223> OTHER INFORMATION: Where the amino acid located at 1 is a hydrophobic amino acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
 67
 70 <220> FEATURE:

71 <221> NAME/KEY: MISC_FEATURE

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72 <222> LOCATION: (2)..(2)
73 <223> OTHER INFORMATION: Where the amino acid located at 2 is an uncharged polar amino
aci
74      d, including Thr, Ser, Tyr, Gly, Gln, and Asn
77 <220> FEATURE:
78 <221> NAME/KEY: MISC_FEATURE
79 <222> LOCATION: (5)..(5)
80 <223> OTHER INFORMATION: Where the amino acid located at 5 is a hydrophobic amino
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81      cluding Val, Leu, Ile, Met, Pro, Phe, and Ala
84 <220> FEATURE:
85 <221> NAME/KEY: MISC_FEATURE
86 <222> LOCATION: (8)..(10)
87 <223> OTHER INFORMATION: Where the amino acids located at 8-10 are hydrophobic amino
acids
88      , including Val, Leu, Ile, Met, Pro, Phe, and Ala
91 <220> FEATURE:
92 <221> NAME/KEY: MISC_FEATURE
93 <222> LOCATION: (13)..(13)
94 <223> OTHER INFORMATION: Where the amino acid located at 13 is a hydrophobic amino
acid, i
95      ncluding Val, Leu, Ile, Met, Pro, Phe, and Ala
98 <220> FEATURE:
99 <221> NAME/KEY: MISC_FEATURE
100 <222> LOCATION: (14)..(14)
101 <223> OTHER INFORMATION: Where the amino acid located at 14 is an uncharged polar
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102      id, including Thr, Ser, Tyr, Gly, Gln, and Asn
105 <220> FEATURE:
106 <221> NAME/KEY: MISC_FEATURE
107 <222> LOCATION: (16)..(17)
108 <223> OTHER INFORMATION: Where the amino acids located at 16 and 17 are hydrophobic
amino
109      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
112 <220> FEATURE:
113 <221> NAME/KEY: MISC_FEATURE
114 <222> LOCATION: (22)..(22)
115 <223> OTHER INFORMATION: Where the amino acid located at 22 is an uncharged polar
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116      id, including Thr, Ser, Tyr, Gly, Gln, and Asn
119 <220> FEATURE:
120 <221> NAME/KEY: MISC_FEATURE
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122 <223> OTHER INFORMATION: Where the amino acids located at 26 and 27 are hydrophobic
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123      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
126 <220> FEATURE:
127 <221> NAME/KEY: MISC_FEATURE
128 <222> LOCATION: (29)..(30)
129 <223> OTHER INFORMATION: Where the amino acids located at 29 and 30 are hydrophobic
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130      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
133 <220> FEATURE:

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134 <221> NAME/KEY: MISC_FEATURE .
135 <222> LOCATION: (33)..(33)
136 <223> OTHER INFORMATION: Where the amino acid located at 33 is a hydrophobic amino
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137 ncluding Val, Leu, Ile, Met, Pro, Phe, and Ala
140 <220> FEATURE:

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143 <223> OTHER INFORMATION: Where the amino acid located at 35 is an uncharged polar
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144      id, including Thr, Ser, Tyr, Gly, Gln, and Asn
147 <220> FEATURE:
148 <221> NAME/KEY: MISC_FEATURE
149 <222> LOCATION: (37)..(38)
150 <223> OTHER INFORMATION: Where the amino acids located at 37 and 38 are hydrophobic
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157 1      5      10      15
160 Xaa Asp Asn Asn Lys Xaa Glu Lys Glu Xaa Xaa Asp Xaa Xaa Asp Lys
161      20      25      30
164 Xaa Cys Xaa Lys Xaa Xaa
165      35
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169 <211> LENGTH: 39
170 <212> TYPE: PRT
171 <213> ORGANISM: Homo sapiens
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175 <222> LOCATION: (1)..(2)
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180 <220> FEATURE:
181 <221> NAME/KEY: MISC_FEATURE
182 <222> LOCATION: (3)..(3)
183 <223> OTHER INFORMATION: Where the amino acid located at 3 is an uncharged polar
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184      d, including Thr, Ser, Tyr, Gly, Gln, and Asn
187 <220> FEATURE:
188 <221> NAME/KEY: MISC_FEATURE
189 <222> LOCATION: (6)..(6)
190 <223> OTHER INFORMATION: Where the amino acid located at 6 is a hydrophobic amino
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191      cluding Val, Leu, Ile, Met, Pro, Phe, and Ala
194 <220> FEATURE:
195 <221> NAME/KEY: MISC_FEATURE
196 <222> LOCATION: (9)..(11)
197 <223> OTHER INFORMATION: Where the amino acids located at 9-11 are hydrophobic amino
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198      , including Val, Leu, Ile, Met, Pro, Phe, and Ala
201 <220> FEATURE:
202 <221> NAME/KEY: MISC_FEATURE
203 <222> LOCATION: (14)..(14)
204 <223> OTHER INFORMATION: Where the amino acid located at 14 is a hydrophobic amino
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205      ncluding Val, Leu, Ile, Met, Pro, Phe, and Ala
208 <220> FEATURE:

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209 <221> NAME/KEY: MISC_FEATURE .
210 <222> LOCATION: (15)..(15)
211 <223> OTHER INFORMATION: Where the amino acid located at 15 is an uncharged polar
amino ac

RAW SEQUENCE LISTING

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212      id, including Thr, Ser, Tyr, Gly, Gln, and Asn
215 <220> FEATURE:
216 <221> NAME/KEY: MISC_FEATURE
217 <222> LOCATION: (17)..(18)
218 <223> OTHER INFORMATION: Where the amino acids located at 17 and 18 are hydrophobic
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219      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
222 <220> FEATURE:
223 <221> NAME/KEY: MISC_FEATURE
224 <222> LOCATION: (23)..(23)
225 <223> OTHER INFORMATION: Where the amino acid located 23 is an uncharged polar amino
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226      including Thr, Ser, Tyr, Gly, Gln, and Asn
229 <220> FEATURE:
230 <221> NAME/KEY: MISC_FEATURE
231 <222> LOCATION: (27)..(28)
232 <223> OTHER INFORMATION: Where the amino acids located at 27 and 28 are hydrophobic
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236 <220> FEATURE:
237 <221> NAME/KEY: MISC_FEATURE
238 <222> LOCATION: (30)..(31)
239 <223> OTHER INFORMATION: Where the amino acids located at 30 and 31 are hydrophobic
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240      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
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245 <222> LOCATION: (34)..(34)
246 <223> OTHER INFORMATION: Where the amino acid located at 34 is a hydrophobic amino
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247      ncluding Val, Leu, Ile, Met, Pro, Phe, and Ala
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252 <222> LOCATION: (36)..(36)
253 <223> OTHER INFORMATION: Where the amino acid located at 36 is an uncharged polar
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257 <220> FEATURE:
258 <221> NAME/KEY: MISC_FEATURE
259 <222> LOCATION: (38)..(39)
260 <223> OTHER INFORMATION: Where the amino acids located at 38 and 39 are hydrophobic
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261      acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
264 <400> SEQUENCE: 4
W--> 266 Xaa Xaa Xaa Cys Glu Xaa Cys Glu Xaa Xaa Xaa Lys Glu Xaa Xaa Lys
      267 1          5          10          15
      270 Xaa Xaa Asp Asn Asn Lys Xaa Glu Lys Glu Xaa Xaa Asp Xaa Xaa Asp
      271          20          25          30
      274 Lys Xaa Cys Xaa Lys Xaa Xaa
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      278 <210> SEQ ID NO: 5
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      280 <212> TYPE: PRT

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281 <213> ORGANISM: Homo sapiens .
283 <220> FEATURE:
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RAW SEQUENCE LISTING

DATE: 05/08/2003

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Input Set : A:\EP.txt

Output Set: N:\CRF4\05082003\I780438C.raw

285 <222> LOCATION: (1)..(1)

286 <223> OTHER INFORMATION: Where the amino acid located at 1 is a hydrophobic amino acid, including Val, Leu, Ile, Met, Pro, Phe, and Ala

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290 <220> FEATURE:

291 <221> NAME/KEY: MISC_FEATURE

292 <222> LOCATION: (2)..(2)

293 <223> OTHER INFORMATION: Where the amino acid located at 2 is an uncharged polar amino acid, including Thr, Ser, Tyr, Gly, Gln, and Asn

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297 <220> FEATURE:

298 <221> NAME/KEY: MISC_FEATURE

299 <222> LOCATION: (5)..(5)

300 <223> OTHER INFORMATION: Where the amino acid located at 5 is a hydrophobic amino acid, including Val, Leu, Ile, Met, Pro, Phe, and Ala

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304 <220> FEATURE:

305 <221> NAME/KEY: MISC_FEATURE

306 <222> LOCATION: (8)..(10)

307 <223> OTHER INFORMATION: Where the amino acids located at 8-10 are hydrophobic amino acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala

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311 <220> FEATURE:

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313 <222> LOCATION: (13)..(13)

314 <223> OTHER INFORMATION: Where the amino acid located at 13 is a hydrophobic amino acid, including Val, Leu, Ile, Met, Pro, Phe, and Ala

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318 <220> FEATURE:

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320 <222> LOCATION: (14)..(14)

321 <223> OTHER INFORMATION: Where the amino acid located at 14 is an uncharged polar amino acid, including Thr, Ser, Tyr, Gly, Gln, and Asn

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325 <220> FEATURE:

326 <221> NAME/KEY: MISC_FEATURE

327 <222> LOCATION: (16)..(17)

328 <223> OTHER INFORMATION: Where the amino acids located at 16 and 17 are hydrophobic amino acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala

329

332 <220> FEATURE:

333 <221> NAME/KEY: MISC_FEATURE

334 <222> LOCATION: (22)..(22)

335 <223> OTHER INFORMATION: Where the amino acid located at 22 is an uncharged polar amino acid, including Thr, Ser, Tyr, Gly, Gln, and Asn

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339 <220> FEATURE:

340 <221> NAME/KEY: MISC_FEATURE

341 <222> LOCATION: (26)..(27)

342 <223> OTHER INFORMATION: Where the amino acids located at 26 and 27 are hydrophobic amino acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala

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346 <220> FEATURE:

347 <221> NAME/KEY: MISC_FEATURE
348 <222> LOCATION: (29)..(30)
349 <223> OTHER INFORMATION: Where the amino acids located at 29 and 30 are hydrophobic
amino
350 acids, including Val, Leu, Ile, Met, Pro, Phe, and Ala
353 <220> FEATURE:

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/780,438C

DATE: 05/08/2003
TIME: 14:42:58

Input Set : A:\EP.txt

Output Set: N:\CRF4\05082003\I780438C.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

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Seq#:4; Xaa Pos. 1, 2, 3, 6, 9, 10, 11, 14, 15, 17, 18, 23, 27, 28, 30, 31, 34, 36, 38, 39
Seq#:5; Xaa Pos. 1, 2, 5, 8, 9, 10, 13, 14, 16, 17, 22, 26, 27, 29, 30, 33, 35, 37, 38
Seq#:6; Xaa Pos. 1, 2, 5, 8, 9, 10, 13, 14, 16, 17, 22, 26, 27, 29, 30, 33, 35, 37, 38

VERIFICATION SUMMARY

DATE: 05/08/2003

PATENT APPLICATION: US/09/780,438C

TIME: 14:42:58

Input Set : A:\EP.txt

Output Set: N:\CRF4\05082003\I780438C.raw

L:156 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
M:341 Repeated in SeqNo=3
L:266 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0
M:341 Repeated in SeqNo=4
L:376 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0
M:341 Repeated in SeqNo=5
L:486 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0
M:341 Repeated in SeqNo=6